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Gorza

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[54] **FASTENING PARTICULARLY FOR SKIS**

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[51] **Int. Cl.**[5] **A63C 9/08**

[52] **U.S. Cl.** **280/616**; 280/628; 280/633; 280/634

[58] **Field of Search** 280/616, 617, 618, 633, 280/634, 636, 628, 626

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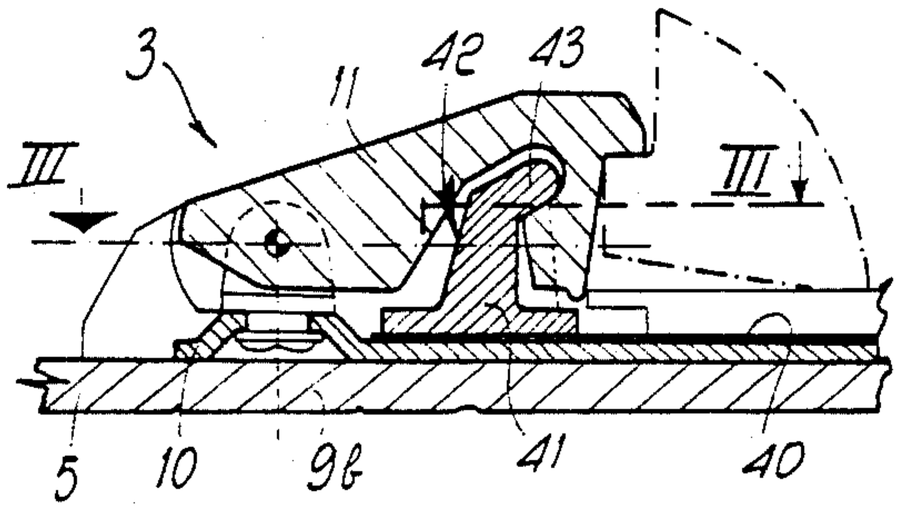
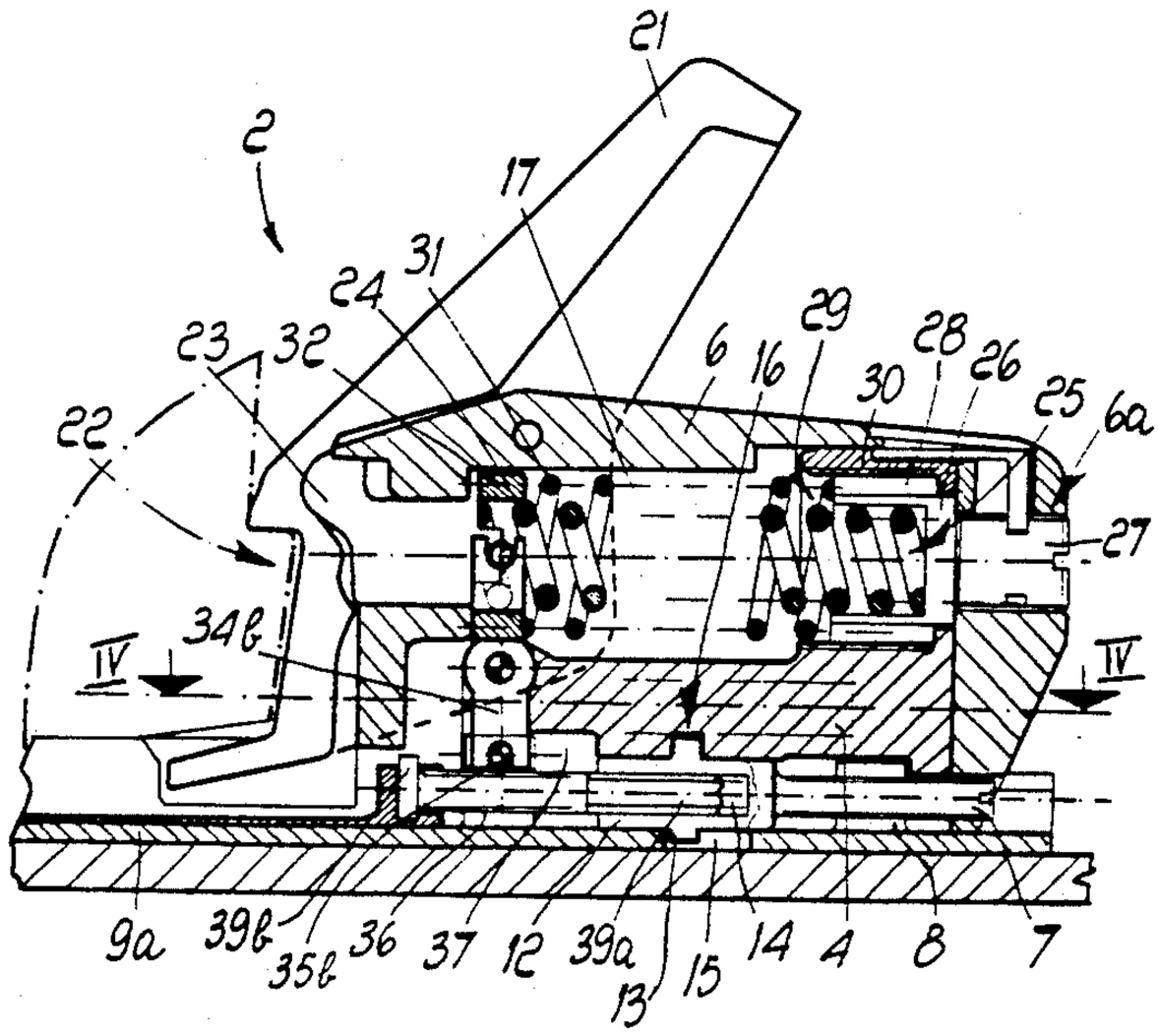
Attorney, Agent, or Firm—Guido Modiano; Albert Josif

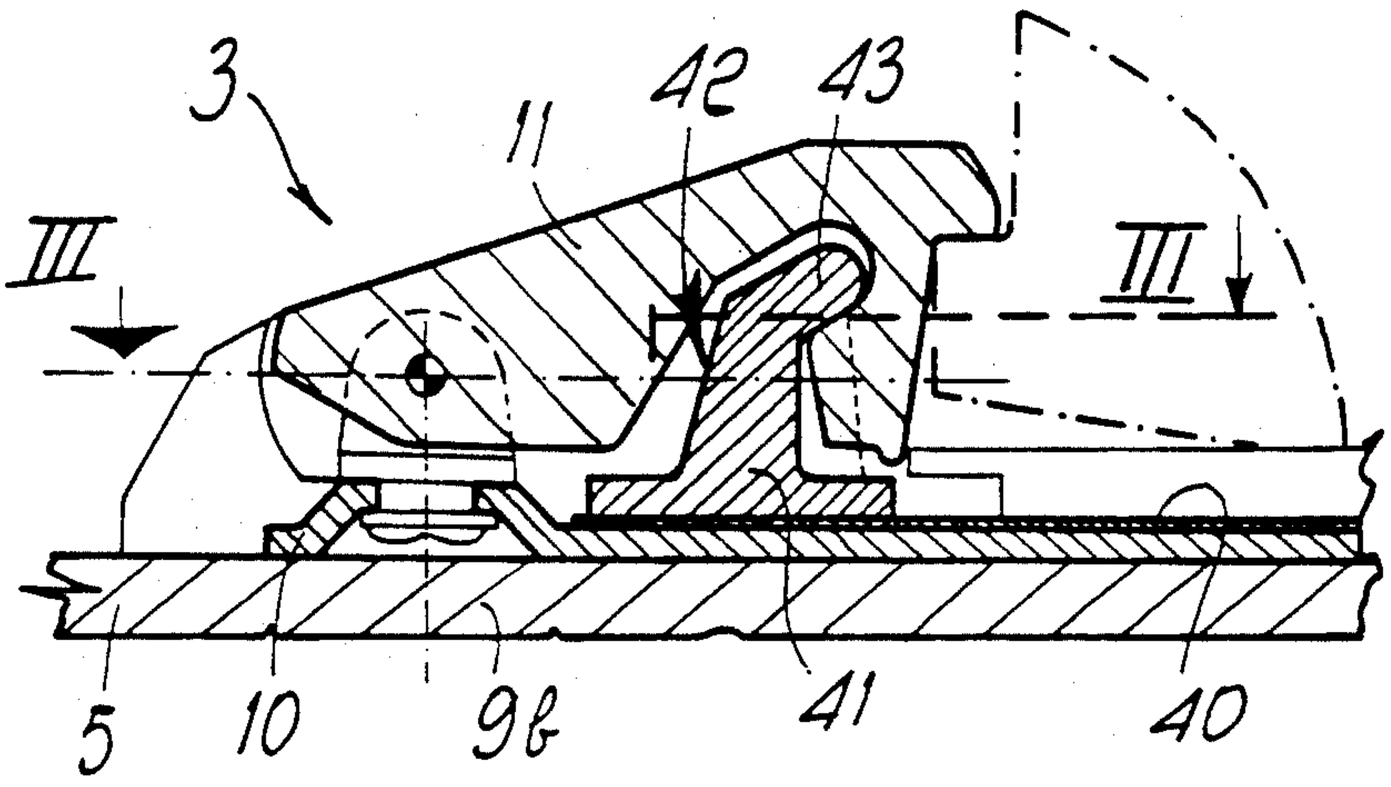
[57] **ABSTRACT**

The ski fastening includes a pivoting toe locking element which provides a first toe holding down locking force by means of a first spring and a rear heel locking element which provides a second heel holding down locking force by means of a second spring. Both the first spring and the second spring are housed in the heel holding device and both the locking forces provided by such springs are simultaneously adjustable upon the activation of a single screw element also provided on the heel holding device. The heel holding device furthermore includes a first body connectable to a ski in an adjustable position and a second body which is slidably supported by the first body in a direction parallel to the longitudinal extension of the ski to thereby maintain a constant distance between the heel holding device and the toe holding device of the fastening even during flexing of the ski during use.

15 Claims, 3 Drawing Sheets






3
11
42
43
III
III
5
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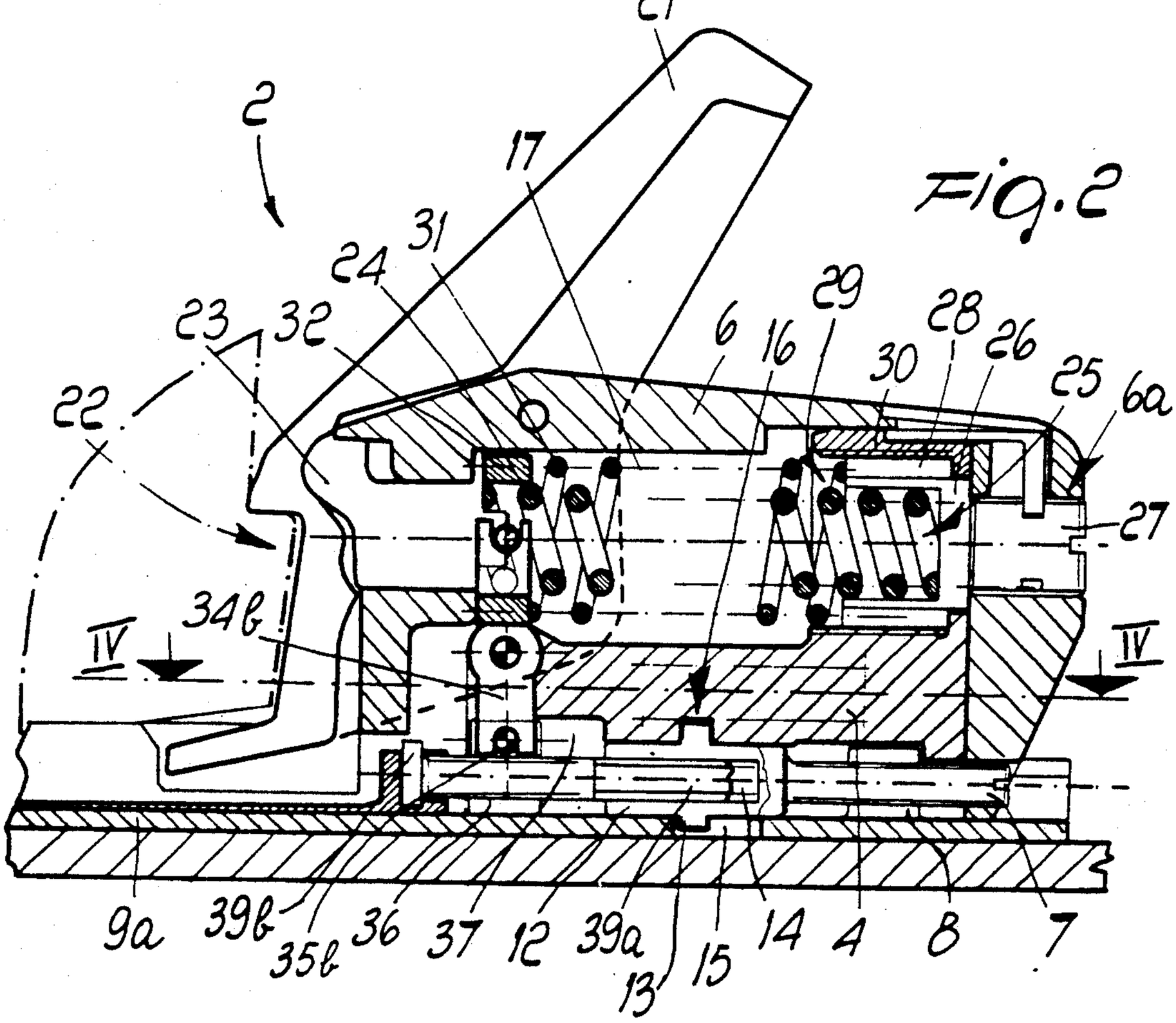
9b
41
40

Fig. 1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32
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6
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29
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28
26
25
6a
27
34b
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IV
9a
39b
35b
36
37
12
39a
13
15
14
4
8
7

Fig. 2

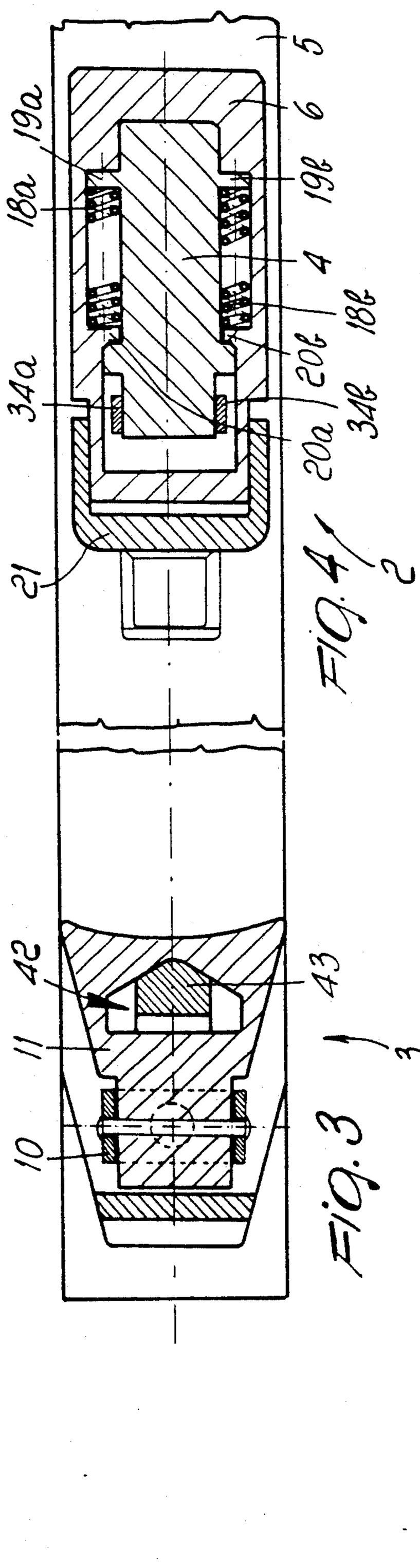

Fig. 4

Fig. 3

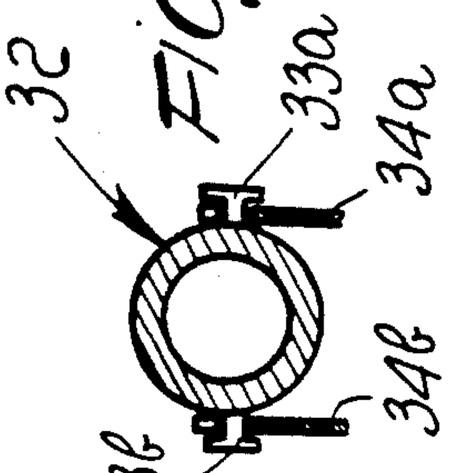

Fig. 7

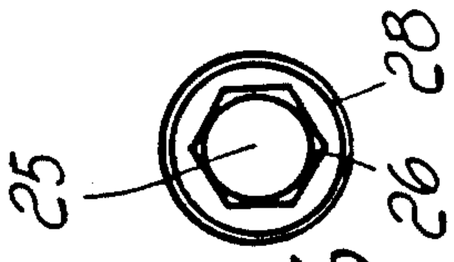

Fig. 6

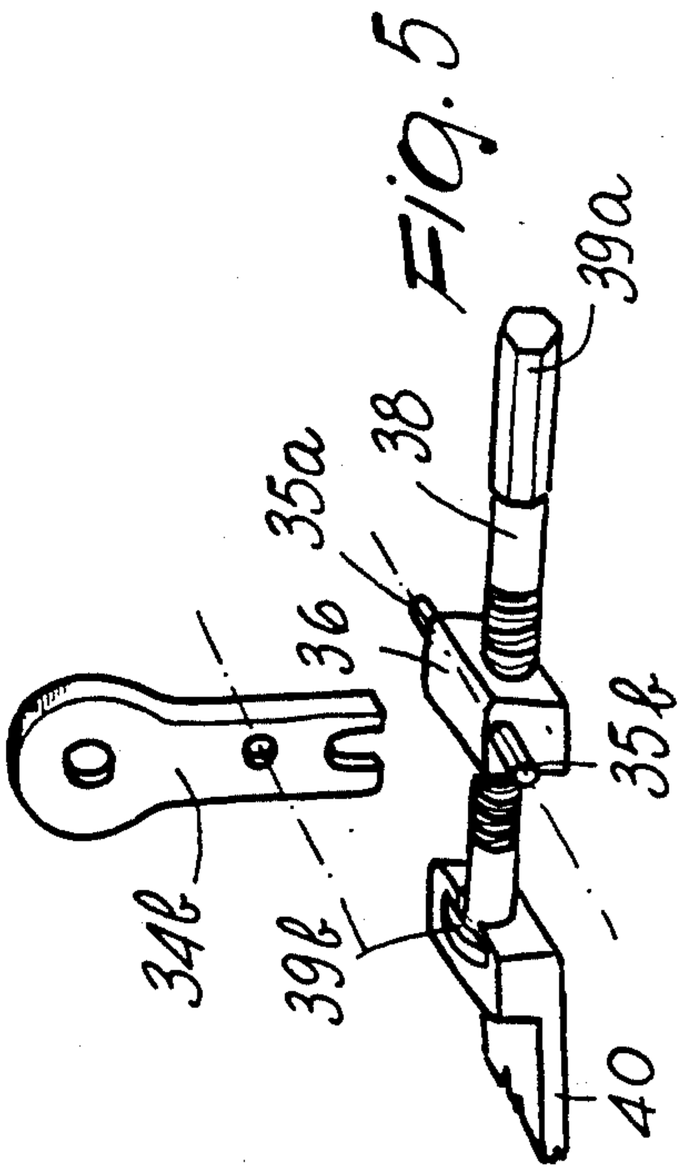

Fig. 5

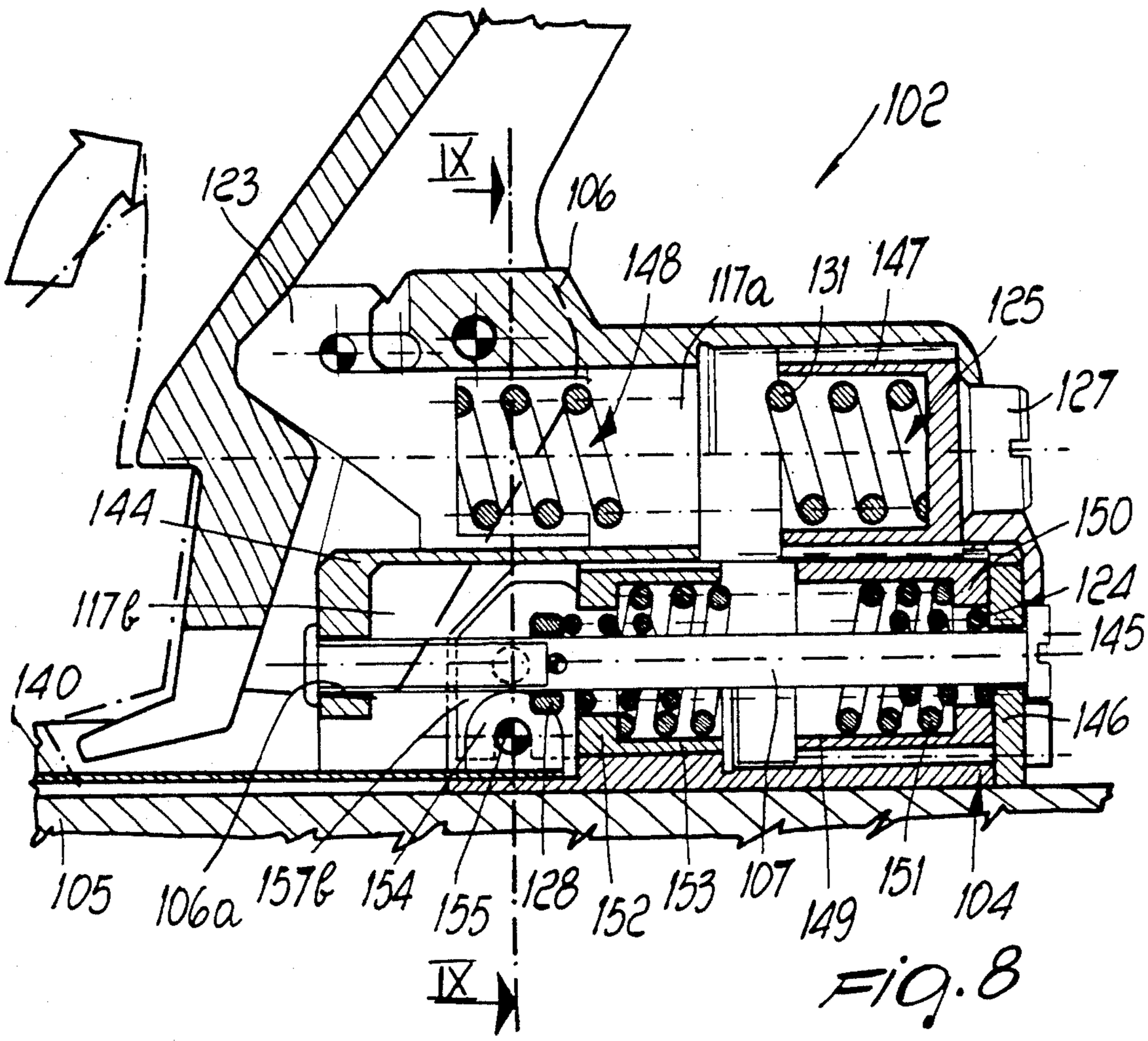
102
IX
123
106
148
117a
131
147
125
127
144
150
124
117b
145
140
146
105
106a
157b
154
155
128
152
153
107
149
151
104
IX

Fig. 8

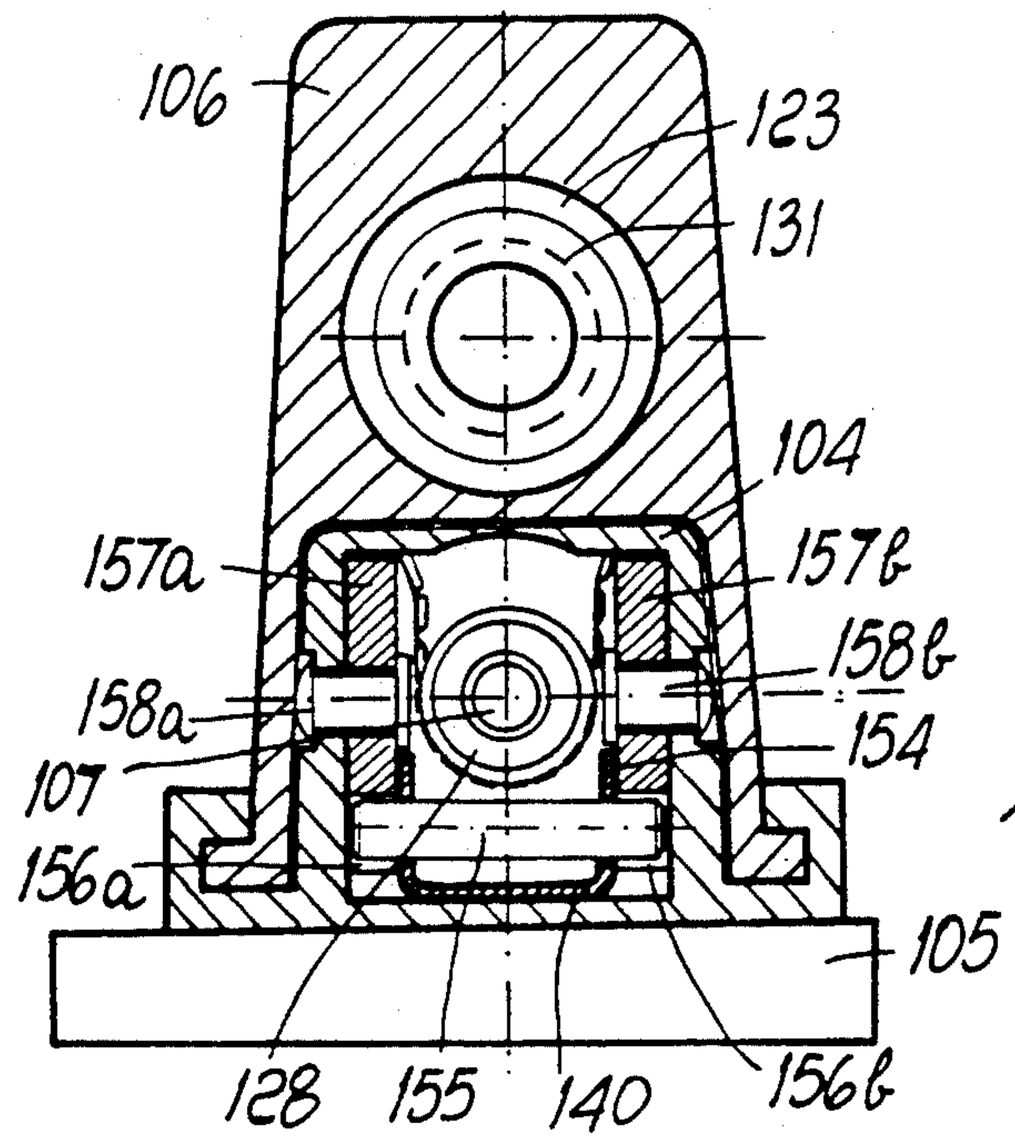
106
123
131
104
157a
157b
158b
158a
154
107
156a
105
128
155
140
156b

Fig. 9

FASTENING PARTICULARLY FOR SKIS

BACKGROUND OF THE INVENTION

The present invention relates to a fastening particularly usable in skis.

The known ski fastenings are constituted by a heel element and by a tip element, both associated with the ski, in order to allow the engagement of the usually standardized ends of a ski boot.

Said heel element and said tip element therefore have adapted and separate adjustment means for the correct engagement, disengagement and securing of the boot.

This solution, however, forces the skier to perform separate operations in order to optimally adjust the heel element and the tip element.

As a partial solution to this disadvantage, an Austrian patent Application No. 2622/81, filed on Jun. 12, 1981, discloses a fastening which comprises a front engagement element and a rear engagement element as well as adjustment means interposed therebetween.

Even this solution, however, has disadvantages: first of all said adjustment means are subjected to considerable stress, which leads to their rapid wear; secondly, said adjustment means, instead of varying the degree of securing of the tip element and of the heel element at the end of the boot, substantially allow to adjust the distance between the heel element and the tip element according to the size of the boot.

Finally, it should be noted that the stiff elements, such as rods, used for connecting the adjustment means with the supports for the heel element and the tip element, stiffen the ski and limit its flexibility.

SUMMARY OF THE INVENTION

The aim of the present invention is therefore to eliminate the disadvantages described above in known types by providing a fastening which allows the skier to simultaneously achieve, with a single operation, an optimum adjustment of both the front and rear engagement means.

Within the scope of the above described aim, an important object is to provide a ski fastening having components whereof are not subjected to heavy stresses during the adjustments made thereto.

Another important object is to provide a ski fastening which allows to maintain the relative distance between the front and rear engagement means during the inflections to which the ski is subjected during its use.

Not least object is to provide a ski fastening which is reliable and safe in use.

This aim, these objects and others which will become apparent hereinafter are achieved by a fastening, particularly for skis, which includes a front engagement means for engaging a ski boot toe portion and a rear engagement means for engaging a ski boot heel portion, said front and rear engagement means both being mountable on a ski top portion which defines a separated distance therebetween, said rear engagement means comprising a pivoting heel locking element and a first adjustable biasing means for providing a first adjustable locking force acting on said pivoting heel locking element, said front engagement means comprising a pivoting tip locking element and a second adjustable biasing means for providing a second adjustable locking force acting on said pivoting tip locking element, said first adjustable biasing means comprising a first spring means and said second adjustable biasing means comprising a second spring means, wherein said rear engagement means comprises means for housing both of said first spring means and said second spring means, and wherein the fastening further comprises means for simultaneously adjusting both said first and second adjustable locking forces. Advantageously, the means for housing both of said first spring means and said second spring means comprises a first body connectable at an adjustable position to the ski and a second body which is slidably supported with respect to the first body against the action of spring biasing means along a direction which parallel to the longitudinal direction of the ski to thereby maintain a constant distance between the front and rear engagement means even upon flexing of the ski.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the invention will become apparent from the detailed description of two particular but not exclusive embodiments, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

FIG. **1** is a sectional view of the front engagement means, taken along a longitudinal median axis;

FIG. **2** is a view, similar to the preceding one, of the rear engagement means;

FIG. **3** is a view taken along a sectional plane III—III of FIG. **1**;

FIG. **4** is a view taken along the sectional plane IV—IV of FIG. **2**;

FIG. **5** is an exploded view of some of the components of the rear engagement means;

FIGS. **6** and **7** are views of other details present at the rear engagement means;

FIG. **8** is a view, similar to that of FIG. **2**, of a second embodiment for the rear engagement means;

FIG. **9** is a view taken along the sectional plane IX—IX of FIG. **8**.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the above figures, the ski fastening, according to the present invention, comprises a rear engagement means **2** and a front engagement means **3**.

The rear engagement means **2** is constituted by a first body **4** which is associated with a ski **5** and by a second body **6** which is slidable with respect to the first body **4**.

The rear engagement means can be made to slide with respect to the ski **5**, for example in order to adjust the interspace between the rear engagement means and the front engagement means; during said sliding, the first body **4** and the second body **6** rigidly move together, relatively to the ski **5**.

This sliding is allowed by a first screw **7** having a stem which interacts with a complementarily threaded support **8**. The support **8** is rigidly coupled to, and protrudes from, a rear plate **9***a*, which is rigidly associated with the ski **5**. A front plate **9***b* is frontally provided on the same axis as the plate **9***a* and is also rigidly associated with the ski **5**. A U-shaped profiled element **10** is pivoted thereto centrally to the base, and a tip element **11**, which constitutes the front engagement means **3**, is pivoted between the wings of said U-shaped profiled element **10** along an axis which is transverse to the ski **5**.

The first screw **7** has an end which can be accessed from the outside of the rear engagement means **2** in order to activate it by means of adapted tools such as for

example a screwdriver; its other end, indicated by the numeral **12**, has a perimetric tang **13** and a first axial seat with a polygonal shape, indicated by the numeral **14**.

On one side, the perimetric tang **13** slides axially to the ski within an adapted second seat **15** which is defined longitudinally at the rear plate **9***a*; at the other side it is coupled to the first body **4** at a first groove **16** which is defined thereon.

The first body **4** is accommodated within a first cavity **17** internally provided in the second body **6**.

The sliding of the second body **6** with respect to the first body **4**, and therefore with respect to the ski, occurs in contrast with a pair of first springs **18***a* and **18***b* which are interposed between a pair of first tabs **19***a* and **19***b* which protrude laterally to the first body **4** and a pair of second tabs **20***a* and **20***b* which face the preceding ones and protrude internally to the second body **6** toward the adjacent first body **4**.

The rear engagement means furthermore comprises a lever **21** which is pivoted transversely proximate to the end of the second body **6** which faces the front engagement means **3**; said lever comprises at its lower end a heel locking element for releasably engaging and holding down the heel **22** of a ski boot.

A cam **23** furthermore protrudes axially at the end of the second body **6** to which the lever **21** is pivoted, and interacts with the lever **21** in contrast with a first elastically deformable element constituted by a first spring **24**.

Said spring has an end which interacts with the corresponding end of the cam **23** and which is internal to the first cavity **17** of the second body **6**; the other end of the spring **24** is accommodated within a third cylindrical seat **25** which is defined axially to a polygonal element **26** which is associated with the end of a second screw **27** which can be accessed from the outside of the second body **6** and which engages therewith at a threaded seat **6***a* defined thereon.

As will become clear hereinafter, the second screw **27** forms part of the means for simultaneously adjusting both of the locking forces for holding down the ski boot provided by the front and rear engagement means.

A first cylinder **28** is associated externally and coaxially to the polygonal element **26**, is internally shaped complementarily to said polygonal element and is externally threaded so as to engage a complementarily shaped thread defined at a fourth cylindrical seat **29** which is defined axially to the first body **4** at a third tab **30** which protrudes therefrom from the end adjacent to the support **8**.

The end of a second elastically deformable element, such as a second spring **31**, is accommodated within the fourth seat **29** and abuts at the end of the first cylinder **28**.

Said second spring **31** is arranged coaxially and externally to the first spring **24** and interacts with the surface of a second cylinder **32** which is arranged adjacent and coaxial to the end of the cam **23** which is internal to the first cavity **17**.

First pins, indicated by the numerals **33***a* and **33***b*, protrude diametrically to the second cylinder **32** along a plane which is transverse to the ski **5**.

The end of a first pair of rockers **34***a* and **34***b* is connected to the first pins; said rockers are preferably centrally pivoted transversely to the first body **4** and are connected, at their other end, to a pair of second pins **35***a* and **35***b*.

Said second pins protrude longitudinally to a block **36** which is arranged transversely and below the first body **4** at an adapted second cavity **37** defined thereon.

An internally threaded seat for a complementarily threaded third screw **38** is defined transversely to the block **36**; one of the ends of said screw, which are indicated by the numerals **39***a* and **39***b*, is shaped complementarily to, and accommodated at, the first seat **14** defined at the end of the first screw **7**, and the other one is mushroom-shaped.

The mushroom-shaped end **39***b* is associated in a complementarily shaped seat defined at the end of a rod **40** which is slidable above the front plate **9***b* and the rear plate **9***a*.

The rod **40** extends on said plates until it is proximate to the profile **10**; a third pin **41** protrudes thereat and is accommodated in a third cavity **42** provided on the tip element **11**.

The third pin **41** has a fourth tab **43** which is at an angle with respect to the plane of arrangement of the ski so as to form an acute angle in the direction of the tip of said ski, which assumes, in the region directed toward the rear engagement means, a triangular configuration with a rounded vertex.

The third cavity **42** assumes a similar configuration at the fourth tab **43**.

The use of the ski fastening is as follows: initially, in order to adjust the release load, a rotation is imparted to the second screw **27** by means of adapted tools.

Said screw **27** compresses the first spring **24** and the first cylinder **28** is simultaneously moved, by virtue of the coupling between the polygonal element **26** and said first cylinder **28**, concordantly with the movement of the screw **27**, which compresses the second spring **31**.

The pitches of the threads of the second screw **27** and of the cylinder **28** may be identical or different from one another; in the latter case, part of the ratio occurring between the first spring **24** and the second spring **31** can be obtained by varying the pitches of the two threads.

The action of the first spring **24** contrasts the rotation of the lever **21** by means of the cam **23** and therefore the release of the heel element.

The second spring **31** instead opposes the translatory motion of the second cylinder **32** which is imparted by the movement of the tip element in the manner described hereafter.

If the release of the tip element in limit conditions is to be achieved, the third pin **41** has the function of subjecting the rod **40** to traction and of then sliding it forward with respect to the ski consequent to a rotation of the tip element **11** on the vertical plane or on the horizontal plane.

The translatory motion of the rod **40** and consequently of the third screw **38** with respect to the first screw **7** moves forward the block **36** and thus the pair of second pins **35***a* and **35***b*, thereby rotating the rockers **34***a* and **34***b* around the axis of pivoting to the first body **4**.

The end of the rockers which engage the first pins **33***a* and **33***b* therefore oscillates backward, moving the second cylinder **32** to compress the second spring **31**.

Once the reaction or locking force provided by the spring, which is equal to the set limit load, is overcome, the tip element will rotate to thereby release the boot.

If the fastening is to be adapted to the length of the sole, a rotation imparted to the first screw **7** is followed by the backward movement of the assembly of elements

formed by the first body **4** and by the second body **6** with respect to the tip element **11**.

The motion transmitted to the third screw **38** ensures the backward motion of the block **36** with respect to said third screw and therefore of the second pins **35***a* and **35***b* in order to ensure the vertical alignment of the first pins **33***a* and **33***b* with the second pins **35***a* and **35***b* so as to maintain the neutral position for the rockers **34***a* and **34***b*.

It is finally possible to maintain the relative distance between the rear and front engagement means during the inflection of the ski in use by virtue of the sliding of the second body **6** with respect to the first body **4** in contrast with the first springs **18***a* and **18***b*.

The relative mutual translatory motion is also imparted between the second screw **27** and the first cylinder **28** by virtue of their mutual polygonal coupling.

This allows to keep unchanged the degree of compression of the first and second springs: the first spring **24** is fact moves rigidly with the second body **6** and with the second screw **27**, whereas the second spring **31** remains in fixed position with respect to the first body **4**, the first cylinder **28** and the second cylinder **32**.

It has thus been observed that the invention has achieved the intended aim and objects, a fastening having been provided which has adjustments which are centralized in a single seat and which can both be actuated simultaneously by means of a single operation.

Adjustments of the locking forces provided by the two engagement means are thus achieved in which there is the assurance that the degree of setting selected for the two engagement means is the same or less than the ratio between the elastic constants of the springs.

Said ratio is, according to the currently applicable laws, constant with good approximation.

This allows, by accommodating the first spring **24** and the second spring **31**, which meet the above mentioned requirement, within the first cavity **17**, to compress both of them by means of the first screw **27**.

It is therefore possible to perform a single manual operation for the simultaneous adjustment of the front and rear engagement means, said adjustments being adequate to the load requirements of said means, thus complying with the currently applicable laws.

Furthermore there is the assurance that the setting selected for the engagement means is the same or less than the ratio between the first spring and the second spring.

Finally, the fastening also has small dimentions.

The invention is naturally susceptible to numerous modifications and variations, all of which are within the scope of the same inventive concept.

FIGS. **8** and **9** illustrate a second embodiment for a ski fastening in which specifically the rear engagement means **102** is again composed of a first body **104** which is fixed with respect to the ski **105** and by a second body **106** which is slidable with respect to the first body.

The second body **106** again has a box-like structure inside which a pair of first cavities **117***a* and **117***b* is defined; said cavities are partially mutually divided by a partition **144** which is arranged approximately parallel to the plane of the ski **105** and is slightly higher than the first body **104** so as to be able to contain said body.

A first screw **107** is arranged longitudinally to the ski at the first lower cavity **117***b* and has a head **145** which protrudes rearward to both the first body **104** and the second body **106**; the other end is threaded and engages at a complementarily threaded seat **106***a* defined on the second body **106**.

The rotation of the first screw **107** therefore allows to adapt the fastening to the length of the sole since a translatory motion of the second body **106** with respect to the ski **105** is forced.

A first spring **124** is arranged coaxially to the stem of the first screw **107** and abuts at one end with the rear wall **146** of the first body **104** and, at the other end, with a first cylinder **128** which is keyed to the first screw **107**.

The purpose of the first spring **124** is to contrast the sliding of the second body **106** with respect to the first body **104** during the inflection of the ski, to recover the elastic plays.

The release load is adjusted by means of a second screw **127** which is rotatably associated with, and rearwardly protrudes from, the second body **106** and has a cylindrical stem **147** on the outer surface whereof a threaded set of teeth is defined and interacts with a complementary thread defined at the facing surface of the second body **106**.

The cylindrical stem **147** is internally partially hollow so as to define a third seat **125** for a second spring **131** which is accommodated at the other end within an adapted fifth seat **148** defined on the end of the cam **123** which protrudes internally to the first cavity **117***a*.

The cylindrical stem **147** of the second screw **127** meshes, upon a rotation imparted thereto, with a complementary threaded set of teeth defined on the outer surface of a third cylinder **149** which is arranged coaxially to the first screw **107** and has a first base **150**, adjacent to the head **145**, which abuts at the end of a third spring **151** which is arranged coaxially and externally to the first spring **124**.

Said third spring **151** abuts, at the other end, with a second base **152** of a fourth cylinder **153** which has an axial through hole for the first screw **107** and for the first spring **124**.

The ski fastening furthermore comprises a rod **140** which has, at the end of the first body **104** which is adjacent to the cam **123**, a pair of shoulders **154** between which a first pin **155** is interposed.

The depressions **156***a* and **156***b*, defined at the lower end of a pair of second cams **157***a* and **157***b* which are freely pivoted laterally to the body **104** by means of second pins **158***a* and **158***b*, are positioned on the ends of said pin **155** which protrude beyond the pair of shoulders **154**.

As regards the release of the tip element in limit conditions, the forward sliding of the rod **140** imparts a rotation to the second cams **157***a* and **157***b*, which compress the third spring **151** through the sliding imparted to the fourth cylinder **153**.

Therefore, for a load equal to the limit value, the release of the boot from the tip element is allowed.

Therefore, this second embodiment, too, achieves the previously mentioned aim and objects.

The materials and dimensions which constitute the individual elements of the safety fastening may naturally be the most appropriate according to the specific requirements.

I claim:

1. A fastening, particularly for skis, comprising a front engagement means for engaging a ski boot toe portion and a rear engagement means for engaging a ski boot heel portion, said front and rear engagement means both being mountable on a ski top portion which defines a separated distance therebetween, said rear engage-

ment means comprising a pivoting heel locking element and a first adjustable biasing means for providing a first adjustable locking force acting on said pivoting heel locking element, said front engagement means comprising a pivoting tip locking element and a second adjustable biasing means for providing a second adjustable locking force acting on said pivoting tip locking element, said first adjustable biasing means comprising a first spring means and said second adjustable biasing means comprising a second spring means, wherein said rear engagement means comprises means for housing both of said first spring means and said second spring means, and wherein the rear engagement means further comprises means for simultaneously adjusting both said first and second adjustable locking forces.

2. The fastening according to claim **1**, wherein said first spring means is constituted by a first spring (**131**) and said second spring means is constituted by a second spring (**151**), said first adjustable biasing means further comprising a cam element (**123**) which is biasable into locking engagement with said pivoting heel locking element by said first spring, said second adjustable biasing means further comprising a pin element (**41**) which is biasable into locking engagement with said tip locking element by said second spring, said means for simultaneously adjusting both said first and second adjustable locking forces comprising:

a screw (**127**) which is rotatably mounted on said means for housing and which is provided with an externally threaded cylindrical stem (**147**) which internally accommodates an end of said first spring (**131**); and

an externally threaded cylinder (**149**) which is slidably supported by said means for housing, which is in threaded engagement with said externally threaded cylindrical stem (**147**), and which internally accommodates an end of said second spring (**151**),

thereby a rotation of said screw (**127**) simultaneously provides translatory motion to both said cylindrical stem (**147**) and said cylinder (**149**) to adjust both said first and second locking forces provided by said first and second springs.

3. The fastening according to claim **2**, wherein said means for housing comprise a first body (**104**) which is rigidly connectable to a ski, and a second body (**106**) which is slidably supported by said first body in a direction parallel to a longitudinal extension of the ski, said second body being biased into a forward position by a third spring means (**124**).

4. The fastening according to claim **3**, wherein said forward position of said second body with respect to said first body is adjustable by means of a second screw (**107**) which is rotatably supported by said first body and which threadingly engages with a treaded portion (**106***a*) of said second body, said third spring means being constituted by a third spring (**124**) which encircles said second screw and which is interposed between a cylinder element (**128**) connected to said second screw and a rear wall (**146**) of said first body (**104**).

5. The fastening according to claim **2**, wherein said second adjustable biasing means further comprise:

a hollow cylindrical element (**153**) which has a base (**153**), which internally accommodates another end of said second spring (**151**), and which is slidably supported by said means for housing;

a pair of pivoting cams (**157***a*,**157***b*) rigidly connected at upper ends thereof to said base (**153**) of said cylindrical element (**153**);

a pin (**155**) connected to lower ends of said pivoting cams; and

a rod element (**40**) which is rigidly connected at one end thereof to said pin element (**41**) and which is connected to said pin (**155**) at another end thereof by means of a pair of shoulders (**154**) rigidly connected therewith.

6. The fastening according to claim **1**, wherein said means for housing comprise a first body (**104**) which is rigidly connectable to a ski, and a second body (**106**) which is slidably supported by said first body in a direction parallel to a longitudinal extension of the ski, said second body being biased into a forward position by a third spring means (**124**), said first spring means being constituted by a first spring (**131**) accommodated in a cavity (**117***a*) of said second body (**106**) and said second spring means being constituted by a second spring (**151**) accommodated in a cavity (**117***b*) of said first body (**104**), said first adjustable biasing means further comprising a cam element (**123**) which is biasable into locking engagement with said pivoting heel locking element by said first spring, said second adjustable biasing means further comprising a pin element (**41**) which is biasable into locking engagement with said tip locking element by said second spring, said means for simultaneously adjusting both said first and second adjustable locking forces comprising:

a screw (**127**) which is rotatably mounted on said second body and which is provided with an externally threaded cylindrical stem (**147**) which internally accommodates an end of said first spring (**131**); and

an externally threaded cylinder (**149**) which is slidably supported by said first body, which is in threaded engagement with said externally threaded cylindrical stem (**147**), and which internally accommodates an end of said second spring (**151**),

thereby a rotation of said screw (**127**) simultaneously provides translatory motion to both said cylindrical stem (**147**) and said cylinder (**149**) to adjust both said first and second locking forces provided by said first and second springs, said second adjustable biasing means further comprising:

a hollow cylindrical element (**153**) which has a base (**153**), which internally accommodates another end of said second spring (**151**), and which is slidably supported by said first body (**104**);

a pair of pivoting cams (**157***a*,**157***b*) rigidly connected at upper ends thereof to said base (**153**) of said cylindrical element (**153**);

a pin (**155**) connected to lower ends of said pivoting cams; and

a rod element (**40**) which is rigidly connected at one end thereof to said pin element (**41**) and which is connected to said pin (**155**) at another end thereof by means of a pair of shoulders (**154**) rigidly connected therewith.

7. The fastening according to claim **6**, wherein said forward position of said second body with respect to said first body is adjustable by means of a second screw (**107**) which is rotatably supported by said first body, which extends through said cavity (**117***b*) of said first body, and which threadingly engages with a treaded portion (**106***a*) of said second body, said third spring means being constituted by a third spring (**124**) which

encircles said second screw internally of said second spring (**151**) and which is interposed between a cylinder element (**128**) connected to said second screw and a rear wall (**146**) of said first body (**104**).

8. The fastening according to claim **1**, wherein said first spring means is constituted by a first spring (**24**) and said second spring means is constituted by a second spring (**31**), said first adjustable biasing means further comprising a cam element (**23**) which is biasable into locking engagement with said pivoting heel locking element by said first spring, said second adjustable biasing means further comprising a pin element (**41**) which is biasable into locking engagement with said tip locking element by said second spring, said means for simultaneously adjusting both said first and second adjustable locking forces comprising:

a screw (**27**) which is rotatably mounted on said means for housing and which is provided with an internally hollow polygonal element (**26**) which internally accommodates an end of said first spring (**24**);

an externally threaded cylinder (**28**) which is internally hollow with a polygonal shape, which is supported by said polygonal element (**26**), and which abuts with an end of said second spring (**31**); and

an internal thread (**30**) which is provided on said means for housing and which is in threaded engagement with said externally threaded cylinder (**28**),

thereby a rotation of said screw (**27**) simultaneously provides translatory motion to both said polygonal element (**26**) and said cylinder (**28**) to adjust both said first and second locking forces provided by said first and second springs.

9. The fastening according to claim **8**, wherein said means for housing comprise a first body (**4**) which is connectable to a ski, and a second body (**6**) which is slidably supported by said first body in a direction parallel to a longitudinal extension of the ski, said second body being biased into a forward position by a third spring means (**18***a*,**18***b*).

10. The fastening according to claim **9**, wherein said third spring means are constituted by a pair of third springs (**18***a*,**18***b*) interposed between a pair of lateral outwardly protruding tabs (**19***a*,**19***b*) of said first body (**4**) and a pair of lateral inwardly protruding tabs (**20***a*,**20***b*) of said second body (**6**).

11. The fastening according to claim **8**, wherein said second adjustable biasing means further comprise:

a hollow cylindrical element (**32**) which abuts against another end of said second spring (**31**);

a pair of rocker elements (**34***a*,**34***b*) which are pivoted transversely at upper ends thereof to said cylindrical element (**32**) by means of a pair of first protruding pins (**33***a*,**33***b*) and which are pivoted at middle portions thereof to said means for housing;

a rod element (**40**) which is rigidly connected at one end thereof to said pin element (**41**) and which is connected to a block (**36**) at another end thereof; and

a pair of second pins (**35***a*,**35***b*) which are rigidly connected with said block (**36**) and to which are pivoted respective lower ends of said pair of rocker elements (**34***a*,**34***b*).

12. The fastening according to claim **1**, wherein said means for housing comprise a first body (**4**) which is connectable to a ski, and a second body (**6**) which is slidably supported by said first body in a direction parallel to a longitudinal extension of the ski, said second body being biased into a forward position by a third spring means (**18***a*,**18***b*), said first spring means being constituted by a first spring (**24**) and said second spring means being constituted by a second spring (**31**) both of which are accommodated in a cavity (**17**) of said second body (**6**), said first adjustable biasing means further comprising a cam element (**23**) which is biasable into locking engagement with said pivoting heel locking element by said first spring, said second adjustable biasing means further comprising a pin element (**41**) which is biasable into locking engagement with said tip locking element by said second spring, said means for simultaneously adjusting both said first and second adjustable locking forces comprising:

a screw (**27**) which is rotatably mounted on said second body (**6**) and which is provided with an internally hollow polygonal element (**26**) which internally

accommodates an end of said first spring (**24**);

an externally threaded cylinder (**28**) which is internally hollow with a polygonal shape, which is supported by said polygonal element (**26**), and which abuts with an end of said second spring (**31**); and

an internal thread (**30**) which is provided on said first body (**4**) and which is in threaded engagement with said externally threaded cylinder (**28**),

thereby a rotation of said screw (**27**) simultaneously provides translatory motion to both said polygonal element (**26**) and said cylinder (**28**) to adjust both said first and second locking forces provided by said first and second springs, said second adjustable biasing means further comprising:

a hollow cylindrical element (**32**) which abuts against another end of said second spring (**31**);

a pair of rocker elements (**34***a*,**34***b*) which are pivoted transversely at upper ends thereof to said cylindrical element (**32**) by means of a pair of first protruding pins (**33***a*,**33***b*) and which are pivoted at middle portions thereof to said first body (**4**);

a rod element (**40**) which is rigidly connected at one end thereof to said pin element (**41**) and which is connected to a block (**36**) at another end thereof; and

a pair of second pins (**35***a*,**35***b*) which are rigidly connected with said block (**36**) and to which are pivoted respective lower ends of said pair of rocker elements (**34***a*,**34***b*).

13. The fastening according to claim **12**, wherein said third spring means are constituted by a pair of third springs (**18***a*,**18***b*) interposed between a pair of lateral outwardly protruding tabs (**19***a*,**19***b*) of said first body (**4**) and a pair of lateral inwardly protruding tabs (**20***a*,**20***b*) of said second body (**6**).

14. The fastening according to claim **12**, further comprising means for adjustably connecting said first body (**4**) to the ski which comprise:

a rigid internally threaded supported (**8**) rigidly fixable to the ski;

a screw element (**7**) which threadingly engages with said threaded support (**8**) and which is provided with an end (**12**) having an internal axial polygonal seat (**14**) and a perimetric protruding tang (**13**); and

a groove (**16**) provided in said first body (**4**) in which said perimetric tang (**13**) is slidingly accommodated,

said rod element (**40**) being connected to said block (**36**) by means of a third screw (**38**) having:

a middle thread portion which engages with a threaded hole provided in said block (**36**);

a first polygonal end (**39***a*) slidably accommodated in said axial polygonal seat (**14**); and

a second mushroom shaped end (**39***b*) slidably accommodated in a cylindrical shaped seat provided in said rod element (**40**).

15. A fastening, particularly for skis, comprising a front engagement means for engaging a ski boot toe portion and a rear engagement means for engaging a ski boot heel portion, said front and rear engagement means both being mountable on a ski top portion which defines a separated distance therebetween, said rear engagement means comprising a pivoting heel locking element and a first adjustable biasing means for providing a first adjustable locking force acting on said pivoting heel locking element, said front engagement means comprising a pivoting tip locking element and a second adjustable biasing means for providing a second adjustable locking force acting on said pivoting tip locking element, said first adjustable biasing means comprising a first spring means and said second adjustable biasing means comprising a second spring means, wherein said rear engagement means comprises means for housing both of said first spring means and said second spring means, and wherein the rear engagement means further comprises means for simultaneously adjusting both said first and second adjustable locking forces, the fastening further comprising means for adjusting said separated distance between said front and rear engagement means.

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